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ABSTRACT

An argument is made against the use of school averages as composition measures by documenting the non-random nature of peer associations and by presenting evidence that different students are influenced by different reference groups. The structure of friendship associations among some 20,000 students in the McDill Twenty High School Sample is examined to illustrate the sources of homogeneity among high school acquaintances. These data are then examined to show that different students in schools are influenced by different reference groups that are visible and meaningful to them. The study concludes that school averages are insufficient and substantively weak measures of how individual students experience their school situation. (Author/EVH)

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ISSUES IN THE MEASUREMENT OF CONTEXTUAL EFFECTS: HOMOGENEITY OF ASSOCIATIONS AND MULTIPLE REFERENCE POPULATIONS

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Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through three programs to achieve its objectives. The Schools and Maturity program is studying the effects of school, family, and peer group experiences on the development of attitudes consistent with psychosocial maturity. The objectives are to formulate, assess, and research important educational goals other than traditional academic achievement. The program has developed the Psychosocial Maturity (PSM) Inventory for the assessment of adolescent social, individual, and interpersonal adequacy. The School Organization program investigates the authority-control structures, task structures, reward systems, and peer group processes in schools. It has produced a large scale study of the effects of open schools on students, has developed the Teams-Games-Tournament (TGT) instructional process for teaching various subjects in elementary and secondary schools, and has produced a computerized system for school-wide attendance monitoring. The School Process and Career Development program is studying transitions from high school to post-secondary institutions and the role of schooling in the development of career plans and the actualization of labor market outcomes.

This report, prepared by the School Organization program, examines the use of school averages in measuring school composition effects, and suggests that homogeneity of peer associations and the existence of multiple reference groups in schools make the use of school averages inadequate.

Abstract

This study argues against the use of school averages as composition measures by documenting the non-random nature of peer associations and by presenting evidence that different students are influenced by different reference groups. The structure of friendship associations among some 20,000 students in the McDill Twenty High School Sample is examined to illustrate the sources of homogeneity among high school acquaintances. These data are then examined to show that different students in schools are influenced by different reference groups that are visible and meaningful to them. The study concludes that school averages are insufficient and substantively weak measures of how individual students experience their school situation.

Issues in the Measurement of Contextual Effects:

Homogeneity of Associations and Multiple Reference Groups

OVERVIEW

Educational sociologists have had a longstanding interest in peer and contextual effects in schools. Wilson (1959) proposed that the social class composition of schools influenced individual goals and orientations. In the 1960's the study of school context became a minor sub-discipline in the field (Michael, 1961; Sewell and Armer, 1966; Coleman, 1961; Alexander and Campbell, 1964; Campbell and Alexander, 1965; McDill, Meyers and Rigsby, 1969). Basically, these studies attempted to show that, net of individual ability and socio-economic (SES) background, the SES composition or other "climate" of the school influenced educational aspirations and achievements. The school context hypothesis was given added support by the Equality of Educational Opportunity Report (EEOR) which reported salutary effects on achievement (especially for disadvantaged and minority students) of attending school with higher SES and/or higher achieving students (Coleman et al, 1966).

Subsequent investigations (Smith, 1972) of the EEOR's findings and criticisms of the methodology of contextual effects research (Hauser, 1971) questioned the validity of these earlier context conclusions. In addition, the demonstrated effects attributable to school contexts are small. Because of small effects and an inadequate methodology, researchers have been urged to "turn to more productive research endeavors" (Hauser et al, 1974). Yet, the policy implications

of composition effect studies would seem to demand a more satisfactory resolution of these methodological issues. These policy concerns and a recent research focus on the schooling process have provided a new impetus for studying context effects. Researchers have documented the existence of multiple contexts, offsetting in nature, which operate to mask conceptually important, although numerically small, contextual effects (Alexander and Eckland, 1975; Nelson, 1972; Johnson, 1971). It has been found that for a given ability level, attending school with high ability students depresses educational aspirations while attending school with higher SES students appears to enhance aspirations (e.g. Alexander and Eckland, 1975). Because high ability and high SES schools occur together, these offsetting composition effects may not be apparent if only the SES composition of the school is considered. Consequently, to understand how school composition influences an individual student's aspirations, both SES and ability contexts have to be considered, but separately.

Even with the addition of multiple contexts, future studies of school process are constrained by the inability to distinguish school effects either methodologically or conceptually. Composition, normative, climate and global school effects are only vaguely distinguished, and the mechanisms through which these various effects influence individuals are poorly specified. Moreover, a matching of methodological procedures sensitive to the characteristic of each effect is lacking. In short, there is a confusion of effects, an inadequate methodology, and a vagueness about the process by which these effects influence individuals.

Studies of effects of student-body composition exemplify this general methodological and conceptual condition. Typically, the composition of the school is measured by an aggregative property of the student body--for example, its average SES, its percentage white, its percentage of students planning to attend college. The question of interest might be: How does the composition of the school influence an individual's aspiration or performance, given his own ability and background characteristics? To answer this question, the effect of the school-level variable is estimated, controlling for the individual's background and other characteristics. Interpreting any observed effect as the operation of a school context has been criticized previously (Hauser, 1971). We add that the reasonableness of using a single aggregate--the school average--as a context measure is contingent upon two assumptions: 1) there is a uniform context and 2) all students are equally influenced by it.

The difficulty with these two assumptions is in locating a means by which such effects could come about and could be transmitted to individual students. Two mechanisms seem plausible--interpersonal process and reference group process.

If the interpersonal process is proposed, then several difficulties with these assumptions seem likely. For the composition of the school to accurately reflect the composition of friendship and other interpersonal relationships within the school, students must interact with a group of peers which compositionally mirrors the school. But this is a

faulty assumption, given the substantial evidence that students prefer peers similar to themselves for their associations (Coleman, 1961; McDill and Rigsby, 1973; Karweit, 1976; Rhodes et al, 1965).

If the reference group process is proposed, difficulties with the uniform context assumption are also likely. We question if students compare or evaluate their academic performance relative to the performance of the entire school. It appears more plausible that such comparisons occur within a curriculum and not across a school. If this is the case, then there is little justification for positing a uniform, school-wide referent population. Multiple, curriculum-specific reference groups may provide a more accurate portrayal of the comparative and evaluative climates within schools.

We suggest that school averages are poor measures of how an individual student experiences the school situation because 1) they ignore the within-school variation in the peer relations of students and 2) they preclude the possibility of the existence of multiple reference groups within schools. The use of school averages has been criticized previously (Bowles and Levin, 1968), and the effects of ignoring within-school differences in allocation and access to resources has been recently discussed (Heyns, 1974; Hanushek, 1970; Summers and Wolfe, 1975, Kidder et al, 1975). But attention has not been focused on the effect of ignoring within-school differences in estimating composition effects (but see McPartland, 1968). Because of the assortment of students into peer groups on the basis of curriculum and other factors related to

educational attainment, ignoring within-school differences in models aimed at understanding the attainment process is likely to be particularly problematic.

This paper presents a case against using school averages as composition measures by documenting the "non-random" nature of peer associations and by presenting evidence for the operation of multiple reference groups. The structure of friendship associations among some 20,000 students surveyed in the McDill Twenty High School sample is examined to illustrate the sources of homogeneity, i.e., non-randomness, among high school acquaintances. After documenting the extent and nature of the non-random assortment of friends, the paper then examines the hypothesis that multiple and population specific reference groups exist within schools.

DATA

The McDill Twenty High School data comprise a survey of twenty public co-educational high schools carried out in 1964 and 1965 by E. L. McDill and his associates. The schools are not a random sample of schools in the United States as they were purposively selected to maximize variation on certain educational and social variables. Data, in the form of questionnaires and extractions from student records, were obtained for 20,345 students. A survey instrument was administered to the 1,029 teachers in these twenty schools as well as to their principals. In addition, standardized mathematics achievement and arithmetic reasoning tests from the Project Talent test battery were given to the students.

Details of the sampling design and contents of the questionnaire are available in McDill and Rigsby (1973). The specific variables used in this paper are described in appendix A.

I. THE NATURE OF PEER ASSOCIATIONS

Friends have been shown to be similar on a variety of dimensions (values: Byrne et al, 1966; opinions: Broderick, 1956; economic position: Miller et al, 1966). Attitude similarity has frequently been found to be a component in friendship selection and maintenance (Duck, 1973; Newcombe, 1961). Similarity on salient attitudes serves as a reinforcer of one's own attitudes and is seen as the motivating device behind attraction.

The friendship formation process may be viewed as a multi-stage filtering process (Duck, 1973). Friendships are formed by the sequential elimination of possible candidates. Different attributes may be important at different phases of the friendship process. For example, attitudes may serve as early filters while personality factors are important later on. We propose that adolescent friendships in school are formed by such a multi-stage filtering process and explore how the school setting itself is involved in this process.

In the first stage, accidents of proximity determine who is more likely to interact with whom, setting the stage for possible friendship formation. School differentiation practices set out boundaries (such as grade and curriculum) within which friendship choices are more likely to occur. While friendship choices may flow across these boundaries,

on the basis of propinquity, friends are more likely to come from within this bounded group.

Within this group of same grade or same curriculum, then, other characteristics of individual students influence their likelihood of becoming friends. Characteristics which may attract one person to another may be unique to that pair or to that group of friends. A common interest in some sport, for example, might serve as the focus of attraction for a set of friends. Or, a common dislike for another set of students may serve to attract certain students into friendship relations.

We will consider three classifications of filters. Characteristics such as curriculum and grade in schcol are factors which restrict the interaction of students and are classified as proximity filters, which are the first filters employed in this multi-stage filtering process. The next set of filters are background filters, being such characteristics as race, sex, ability, and family origins. The last filters to be considered are attitudinal or value filters. Under this heading, we consider the student's general orientation toward the school setting and academic pursuits in particular.

Proximity Filters

A proximity filter may either restrict or facilitate interaction of students. The differentiation of students into grades and curricula are proximity filters. They determine, to a large degree, the opportunity for contact with specific other students. These two aspects of school

organization (grades and curriculum) are powerful factors influencing who becomes friends with whom (Karweit, 1976). A third proximity filter is participation in extra-curricular activities.

Grade Level. In the McDill data set, there is a pronounced tendency for students to name same-grade students as their friends. For first-choice friendships, 86 percent of the girls and 76 percent of the boys selected a same grade classmate. These percentages remained very high when comparisons were made between the chooser and his second, third or fourth chosen friend. In addition, this predilection for same grade classmate was found to be similar in all twenty of the McDill schools. This strong tendency for same grade friendships is likely due to the rigid differentiation of students into classes and activities on the basis of grade in school.

Curriculum. The selection of same curriculum friends was similarly a pronounced friendship pattern in the McDill Twenty School Data. Because the percentage of students enrolled in specific curricula varies by school, the proportion of same curricular choices was computed separately by school. Additionally, because friendship nominations were sex-specific, separate chooser-chosen matrices were obtained for males and females. Examination of the chi-square values for each of these forty school-sex combinations (data not presented here) indicates that curriculum placement is a predominant factor in friendship selection in every case ($p < .001$ in 36 school-sex combinations, $p < .05$ in 4 school-sex combinations.

Extra-Curricular Participation. Participation or non-participation in extra-curricular activities can also be viewed as a proximity filter. Many students (boys = 40 percent, girls = 25 percent) do not participate at all in the available clubs and activities, and these students choose friends who are similarly not involved. Of the girls who did not participate, about half of their friends also did not, while another 35 percent were members of only one club. Boys followed a similar pattern, with around 45 percent of the uninvolved choosing similarly uninvolved students and an additional 35 percent of their choices being students who participated in one activity only.

Likewise, those students who are heavily involved in activities (3 or more) tend to choose friends who are also high in participation. This tendency was more evident for girls than boys (55 percent vs. 25 percent). The boys participate in fewer clubs on the average than girls (1.04 vs. 1.80) and have only 10 percent of the sample in this high participation category, while the girls have some 25 percent.

Participation in extra-curricular activities may change the friendship selection pattern by altering who comes into contact with whom. These activities offer a meeting place for students of different grades and curricula who would normally not come into contact with one another. If extra-curricular activities do serve such a purpose, cross-curricular and cross-grade choosing should increase with the participation rate. To examine this hypothesis, we determined the percentage of cross-grade and cross-curricular choosing for boys and girls separately, by

categories of participation. Table 1 contains the percentage of cross-curricular choices for those students participating in none, one, two and three or more activities.

The table indicates that cross-curricular choosing increases monotonically with increasing participation. The pattern is evident for both boys and girls and for curriculum choices in both directions (college preparatory choosing non-college preparatory and vice versa).* Participation in extra-curricular activities does alter the interaction patterns in the manner hypothesized.

Table 2 shows the relationship between number of activities and cross-grade choosing. Within-grade choosing is such a pronounced tendency that the number of cases of across-grade choosing, spread across activities, becomes too small for comparison. Therefore, the comparison was made between those not participating and those participating. The tendency for increased cross-grade choosing with increasing participation is not demonstrated as the differences in proportions are not statistically significant. We surmise that the tendency for same-grade choosing is a very stubborn pattern, not readily altered.

Background Filters

How similar are family and other background factors of adolescent friends? In adult life, there is a substantial agreement between both ascribed and achieved characteristics of friends. Laumann (1973)

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* A more stringent test of this hypothesis, which is not carried out here, would entail an examination of the particular activities in which students were involved to see if actual friendship pairs were found in the same activity.

Table 1

Proportion of Students Naming Other Curricula

Students as Friend by Participation in Extra Curricular Activities

	BOYS		GIRLS	
Number of Activities	Not college prep. picking college prep.	College prep. picking not college prep.	Not college prep. picking college prep.	College prep. picking not college prep.
0	.139 n=2007	.272 n=1695	.073 n=1639	.368 n= 692
1	.175 n=1343	.461 n=1014	.089 n=1564	.383 n=1313
2	.194 n= 309	.537 n=1101	.124 n= 764	.492 n=1319
3+	.327 n= 107	.648 n= 518	.175 n= 503	.545 n=1036

Table 2

Proportion of Cross Grade Choosing by Participation in Extra Curricular Activities

Activities	GIRLS n=9739	BOYS n=9624
None	.042 (98/2343)	.094 (353/3746)
One or more	.029 (213/7396)	.051 (298/5878)

documented the homogeneity of adult friends with respect to occupation, education and religious preference (r = .501, .431, .316, and .485, respectively). Because patterns of residential segregation may bring students with similar family backgrounds together, adolescents may show similar correlation patterns.

Socio-Economic Status. Several variables indicate the socio-economic status (SES) of the student's family: father's education, mother's education, father's occupation, family size, father's income and number of books in the home. The zero-order correlations between the chooser and his first choice friend on these variables are reported in Table 3.

From Table 3 we see that family size and number of books in the home are not strongly correlated among adolescent friends. Perhaps as SES indicators these variables are not very visible in the student population. Father's education, mother's education and father's occupation are more strongly correlated among friends, but the magnitude of these coefficients is substantially smaller than those reported by Laumann for adults. Given the unreliability in reports of parental SES (Mason et al, 1976) the differences noted here may simply reflect the differences in reliability of reporting. On the other hand, adults could have more homogeneous associations given that many of their social contacts arise in connection with the workplace or the neighborhood, a less heterogenous environment than schools. Concerning the correlation of father's income level, it is noted that the non-response rate of this question was particularly high, the boys having 26.6 percent non-response,

Table 3

Zero Order Correlation of Socio-Economic Characteristics of Friendship Pairs

	GIRLS First Friend Sample n = 9206	BOYS First Friend Sample n = 9660
Father's Education	.281	.200
Mother's Education	.240	.162
Father's Occupation	.259	.216
Family Size	.104	.078
Number Books	.179	.124
Family Income	.110	.101

All correlations are significant ($p < .01$).
Differences between correlations for boys and girls are significant ($p < .01$), except for family income, not significant.

the girls 27.2 percent non-response. Also, the reliability of student responses on income questions is questionable (Kayser and Summers, 1973).

Table 3 shows that girls are more similar to their friends than boys on a variety of traits. This greater SES homophily for girls is consistent with the findings of Coleman (1961) and Duck (1973). Combined with this greater similarity is a greater tendency to reciprocate friendship choices, which suggests that girls are more likely to be situated in clusters of cohesive and homogeneous friendship groups. If girls' friendship networks are organized in this fashion, then the use of the school average as a context variable is likely to be especially inaccurate for describing their school experiences.

Value System Filters

The proximity and background factors discussed thus far narrow the range of candidates for friendship choices. Faced with this somewhat reduced but still large field of possibilities, what other factors influence the selection of friends?

In the discussion which follows, two broad dimensions are considered. First, the similarity of friends with respect to their status in the informal social system of the school is considered. Are friends selected primarily among those who occupy similar positions in the school status system? Or, because of the competition involved for status positions, are friends not found among status similars? Second, the similarity of friends with respect to their evaluation of academic pursuits is examined. Are students likely to choose friends who are like themselves in terms of educational orientations?

Informal Social System Status. The social system of high schools and its means of ranking, honoring and sanctioning the actions of its members has received considerable previous attention (Gordon, 1957; Coleman, 1961). In this section, we examine the similarity of friends along these lines, using an index of the "status" of each student in his school. This status index, comprised of fifteen items, covers such attributes as access to and use of an automobile, frequency of being named as leading crowd members or of being named most popular. We find that boys have a zero-order correlation between the status of chooser and the first-named friend of .428 (n = 9,000). Girls were typically more like their friends on the status measure than boys, with a zero-order correlation of .522 (n = 9,189).

We are also interested in knowing how similar friends are in their general orientation toward specific spheres of school life. The students were asked how they wished to be remembered in school among these choices (a. 136): 1) brilliant student; 2) leader in activities (girls), athletic star (boys); 3) most popular. Using the students' response to this question as an indication of the importance attached to these dimensions, we can assess how similar friends are on this question. Column 1 of Table 4 gives the percent wishing to be remembered as a student, leader (athlete), or most popular for girls and boys. Column 2 gives the proportion of all persons named as friends who valued each response. Column 3 indicates the proportion of persons named as friends by each category who also value this same trait. That is, for the boys

Table 4

Percentage of friends and respondents wishing to be remembered as brilliant student, athletic star (activity leader) and most popular and percentage, and ratio of self-selection.

	Attribute	% of Resps.	% of Friends	% Self-Selection	Ratio Self-Selection
BOYS	Athlete N=3406	.430	.446	.549	1.23
	Student N=2636	.332	.298	.431	1.45
	Popular N=188	.238	.256	.333	1.31
GIRLS	Leader N=2845	.348	.360	.427	1.19
	Student N=2725	.334	.320	.427	1.33
	Popular N=2585	.317	.319	.457	1.43

who wish to be remembered as an athlete, 54.9 percent of their friends also wish to be so remembered. These figures are termed self-selection figures. Column 4 is the ratio of the percentage of self-selection to the percentage of friends. These ratios of self-selection show the over-selection of similarly inclined friends.

Academic Orientations. Table 5 shows the correlation between the chooser and chosen on several variables indicating academic orientations--grades, academic values, educational expectations, and academic self-concept.

Grades: Grades are the formal evaluation of the student's performance in school and as such are readily visible to other students. The correlation between friends on average English grade received shows that girls are slightly more likely to be similar to their friends ($r = .431$) than are boys (.414). This higher similarity among friends for girls follows a general trend toward greater homogeneity of friendships for girls.

Academic Values: Although girls and their friends tend to be similar in terms of academic marks received, they are not very similar in the extent to which they value academic pursuits. Employing the six-point scale of academic values (see Appendix), the correlation between the girls was .185 and for boys was .209.

Educational Expectations: Similarity among peers in educational aspirations has been previously documented (Duncan, Haller, and Portes, 1968; Kandel and Lesser, 1969; Alexander and Campbell, 1964). In our data, girls are correlated .398 and boys .343. Again, there is a tendency for greater homogeneity of friendships for girls.

Table 5

Zero Order Correlation of Academic Variables

for Friendship Pairs

	GIRLS	BOYS	t^* for sex differences
Grades	.431 (8375)	.414 (8248)	2.40
Academic Values (ACADV)	.185 (9904)	.209 (10135)	1.86
Educational Expectations	.398 (9189)	.343 (9000)	6.60
Academic Self-Concept (Image)	.154 (9266)	.151 (9261)	.63

$$^*t = \frac{Z_1 - Z_2}{(1/N_1 - 3 + 1/N_2 - 3)\ 1/2}$$

Academic Self-concept (IMAGE): Academic concept is defined as each student's perception of his academic ability. The friends in the McDill sample are not very similar (.154 and .151) on this particular item, nor are there noticeable sex differences.

II. MULTIPLE REFERENCE GROUPS

The previous section indicated the nature and extent to which students select similar other students as their friends. This tendency to select similar others as friends implies that the interpersonal setting experienced by an individual student will not be accurately portrayed by using a school average. We now extend our argument against using school average values as context measures by discussing their inapplicability to another frequently posited influence mechanism--reference groups.

Studies of the educational attainment process which use the reference group framework usually distinguish two types of reference groups--normative and comparative.* A normative group has goal setting and standard definition as main functions, while a comparative group lets the individual know how he is doing relative to the standard which has been set, that is, it has an evaluative function. These two reference populations are also termed mirrors (normative) and models (comparative). In discussing how peers influence one another, the assumption is usually that influence occurs via emulation (Picou and Carter, 1976; McDill and

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* This discussion of reference group theory omits important distinctions, such as audience groups (Kemper, 1968), and membership groups (Bidwell, 1972). Although these distinctions are important, their inclusion would obscure rather than clarify the central points at issue here.

Rigsby, 1973). That is, it is assumed that peers serve as comparative reference groups in shaping educational attainments. The particular reference group of peers usually considered in these models is the friendship group.

Normative reference groups are also included in these models of the attainment process. For example, parental influence on educational aspirations is seen as a normative one--that is, parents are seen as standard setters. The socio-economic level or context of the school is also explicitly viewed as a normative influence (Wilson, 1959; McDill and Rigsby, 1973).

Conceptually, the reference group perspective has helped clarify important dimensions in the schooling process. In particular, the view that offsetting influences arise within a school setting (Alexander and Eckland, 1975; Davis, 1966; Meyer, 1970) has been discussed convincingly using this perspective. However, evidence for the operation of offsetting composition effects has been based upon the use of average school values. It is questionable if the average SES of a school is an appropriate indicator of the normative environment for all students within a school. Essentially, we question if it is valid to assume that all students actually compare their performance to a global school characteristic. Given the appreciable segregation of students by curriculum within schools, it seems more likely that students set goals and compare positions, not in terms of school-wide characteristics, but in terms of curriculum-specific ones.

The possible existence of curriculum-specific reference groups is only a particular instance of the more general problem of deciding

1) who or what group is the relevant reference population? and 2) what type of reference group is this population? Adapting an argument advanced by Richer (1976), we pose two criteria for identifying a referent population: 1) its visibility and 2) its meaningfulness. By visibility we mean that a person is aware of the beliefs, attitudes or values of others who may serve as potential reference populations. For example, if students are generally unaware of the educational aspirations of their friends or peers, it is not reasonable to propose that these groups are identifiable influences on aspirations. Secondly, although students may be aware of the orientations of a specific group, the particular orientation may not be meaningful for them. Students in a low ability track may know that other students perform better than they do, but realistically do not evaluate themselves by comparison with higher achieving peers. That is, the higher achieving group of peers is not a meaningful reference group for these students, although is is a visible one.

In this section, we will explore the proposition that multiple reference groups exist within schools by focusing on reference groups as defined by curriculum placement. Our interest here is on the knowledge of, and influence of, fellow students' educational aspirations. We will hypothesize that students may have different perceptions about who is academically competent and that these perceptions depend in part on curriculum placement. If courses are structured by curriculum, then perceptions of "best student" may differ for differing curricula.

Evidence that visibility of academic competence depends upon curriculum placement is provided in Table 6. Students were asked to name the "best student" in the school. We determined the curriculum enrollment of this "best student" and of the person selecting him; the totals across all schools are presented in Table 6. For students who are not in college preparatory programs, 21.2 percent of their choices as "best student" are similarly not in a college preparatory curriculum. Only 5.8 percent of the choices of the college preparatory students, however, indicated non-college preparatory schoolmates as best students. The difference in these percentages indicates that the visibility of "best student" status is related to curriculum placement. It appears that college preparatory students are usually defined as the best students, but somewhat less so by non-college preparatory indivisuals.

Our second condition for a relevant reference group is that the group must also be meaningful to the individual, or the modeling effect will not take place. To examine the meaningfulness issue, we use measures which indicate who the student admires or wishes to be like. The indication of admiration suggests that this person or group of persons is a meaningful reference group. Again, because curriculum placement so profoundly affects with whom one comes into contact, we propose that the student's admiration relationships will differ along curricular lines. This proposal is supported in the data where we find that the non-college preparatory students select 54 percent of their same curriculum classmates as someone they would like to be like and

Table 6

Distribution of Choices by Curriculum

	Chooser Not CP		Chooser CP	
	Chosen		Chosen	
	Not CP	CP	Not CP	CP
Best Student	1203	4474	512	8380
	.212	.788	.058	.942
Like to be like	3149	2691	1257	7378
	.539	.461	.146	.854
Wish to befriend	2068	2256	1385	5538
	.478	.522	.200	.800

48 percent as someone with whom they wish to be friends. The college preparatory students chose only 14 percent of the non-college preparatory students as someone they would like to be like, and they selected only 20 percent of the non-college preparatory students as someone with whom they would like to be friends. These percentages suggest that there is some overlap of reference populations for the two groups, mainly through the over-selection of college preparatory students, but the differences in the selection patterns are appreciable.

This evidence suggests that the use of a school average to characterize reference populations of schools is likely to be inaccurate. Differences in the segment of the population which is either visible or meaningful appear to occur along curricular lines, suggesting that reference populations are more curriculum-specific than school specific.

SUMMARY

The objective of this paper has been to document the fallacy of using school averages in studies of composition effects of schools. It was pointed out that using a single aggregative indicator of the school assumes that a uniform school composition effect exists and that all students are equally affected by it. The difficulty with these two assumptions was seen in locating an influence mechanism by which such an effect could operate. Typically, researchers focus on the interpersonal process or reference group process as influence mechanisms operating within schools. By documenting that significant within-school

differences in the operation of each of these mechanisms occurs, we suggest that school averages are insufficient, inaccurate and substantively weak measures of how individuals experience their school situation.

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APPENDIX A: VARIABLES

The McDill student data included a battery of questions relating to student background and student outcome measures. Additionally several sociometric-type questions were included. For the present study, the friendship relationship is of primary interest. Different questionnaires were given to the boys and girls in the twenty high school study. The question pertaining to friendship choices was phrased (for boys):

"Of the boys here in this school who do you go around with most?" The girls were asked the same question except the word "girls" was substituted for boys. Four lines were left for their answers, but no specific request for naming four friends was made. Cross-sex choices were not allowed.

1. Background Variables
   - A. Father's Education: A seven-category education variable was contained on the student questionnaire. Responses ranged from "some grade school" to "attended graduate school or professional school after college."
   - B. Sex: Female=1, male=0.
   - C. Father's Occupation: A nine-point occupation classification scheme with these categories: unskilled, semi-skilled, skilled, clerical, proprietor, managers, officials, technical, professional. Blue collar workers include the first three classifications, white collar the remainder.
   - D. Mother's Education: A seven-category education variable, which is identical to the father's education variable described above.
   - E. Siblings: On the student questionnaire, the students were asked: How many brothers and sisters do you have? (q. 130).
   - F. Number of Books: Students were asked: Estimate the number of books in your home. The responses could be none or few, one bookcase full, two bookcases full, three or four bookcases full or a room full.
   - G. Family Income: Responses to the question: My family's total yearly income is approximately: under $2500; $2500-$4999; $5000-$7499; $7500-$9999; $10,000-$14,999; $15,000 or more; I don't know.
2. School Variables
   - A. Curriculum: College Preparatory was coded 1 and "other" was coded 0.
   - B. English Grade Point: Quartile placement within the school, obtained from student cumulative record.
   - C. Student Status: A sixteen-point summated index of the student's status in the informal social system of the school based upon the responses

to the following items:

(q. 10) 1. Curriculum (0=not college preparatory; 1=college preparatory)

(q. 37) 2. Activities (0=none; 1=some extra-curricular participation)

(q. 37) 3. Activities (0=low participation; 1=high participation)

(q. 38) 4. Leadership (0=not officer; 1=officer in one or more activities)

(q. 60) 5. Car (0=not own car; 1=own car)

(q. 61) 6. Car (0=not use family car; 1=can use family car)

(q. 396) 7. Grades (0=below B; 1=A or B average)

(q. 92) 8. Leading crowd distance (0=far away; 1=in leading crowd)

(q. 94) 9. Leading crowd (0=not member; 1=is member)

(q. 539) 10. Friendship nominations (0=few times; 1=two or more times)

(q. 542) 11. Athlete (popular) nominations (0=few; 1=two or more times)

(q. 545) 12. Student nominations (0=few times; 1=two or more times)

(q. 548) 13. Like to be friends with (0=few; 1=two or more times)

(q. 551) 14. Nominations like to date (0=not named or once; 1=two or more times)

(q. 554) 15. Nominations be like (0=not named or once; 1=two or more times)

(q. 557) 16. Nominated as leading crowd member (0=not named; 1=one or more times)

The reliability of this measure was .637 for girls and .622 for boys as measured by KR-20.

D. Extra-Curricular Participation: Students were asked: In which of the following clubs or activities are you presently a member or participant here at school? The responses were as follows: school newspaper, magazine, or annual; orchestra, band, or glee club; National Honor Society; subject matter club (math club, music club, Latin club, etc.); hobby clubs (stamp club, photography club, radio club, chess club, crafts, etc.); debating or dramatics; inter-school athletics; service clubs (Beta club, Key club, Hi-Y, etc.); political clubs (Young Democrats or Young Republicans); social clubs, fraternities, or sororities; others.

3. Outcome Variables

A. Educational Expectations: This index of educational plans is based on responses to the following three items.

1. Are you planning to finish high school?

a. Yes

b. No

c. Undecided

2. Are you planning to attend college?
   a. No, never
   b. Yes, but not right after high school
   c. Yes, as a full-time student right after high school
   d. Yes, as a part-time student right after high school
   e. Undecided
3. Check the highest level of education you expect to complete.
   a. Plan to attend a two-year college
   b. Plan to get a bachelor's degree
   c. Plan to do **one** year of graduate study (Master's Degree)
   d. Plan to obtain a professional degree
   e. Plan to obtain a Doctoral Degree
   f. I have not made a decision about my plans

Scores on this index, obtained by combining responses to the three items, vary from 1 (no definite commitment to finishing high school) to 8 (plans to obtain the Ph.D.)

B. Self-Conceptions of Academic Competence: The measure of the student's academic image was constructed from three items, the first two tapping self-evaluation and the third the respondent's perceptions of teacher's evaluations of his/her ability.
   1. I am often not able to keep up with the rest.
      a. Agree
      b. Disagree
   2. I am not doing so well at school.
      a. Agree
      b. Disagree
   3. Of the teachers at this school whom you know, how do you think most of them would rate <u>you</u> as a student?
      a. Poor
      b. Average
      c. Bright

   Unweighted scale scores for this variable were obtained by summing responses to the items. Scores ranged from 3 ("agree" to items 1 and 2 and "poor" to the third item) to 7 ("disagree" to the first two items and "bright" to item 3).

C. Academic Values: This is the "intellectual-achievement" scale recently employed by McDill and Rigsby (1973, p. 41). It consists of a summated binary rating scale of six items, each tapping a different component of students' academic commitment (i.e., interests, values, and motivations). The six-item scale has a reliability coefficient

of .59 (KR-20) (McDill and Rigsby, 1973, pp. 56-62).

1. How the respondent would use a free hour in school:
   a. course
   b. athletics
   c. club or activities
   d. study hall for studying
   e. study hall not for studying

   (Responses "a" and "d" combined)

2. Rank assigned to "learning as much as possible in school" among a list of four alternatives (rank 4 = highest in importance to respondent).
3. How respondent would like to be remembered in school:
   a. brilliant student
   b. athletic star (boys) or leader in activities (girls)
   c. most popular

   (Responses "b" and "c" combined)

4. How important to respondent to receive good grades:
   a. extremely important
   b. important
   c. not important
5. How satisfying to respondent to work hard on studies:
   a. extremely important
   b. important
   c. not important
6. How much respondent admires students who are bright:
   a. very much
   b. a little
   c. not at all